
Network Adaptation Layer Driver

User Guide

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User Guide for NWAL Driver

Overview

This document provides guideline for compiling and executing Network Adaptation Layer Driver (NWAL) with Unit Test included in the release package.

As a pre-requisite refer release note for the corresponding (Multicore Software Development Kit (MCSDK) software in order to find recommended version of compiler and dependent tools. PDK and NWAL Driver would need to be installed by running the installer or extracting the tarball. For rest of the document keyword

- `<PDK_INSTALL_PATH>` refers to the location where PDK is installed.
- `<NWAL_INSTALL_PATH>` refers to the location where SA LLD is installed

NWAL Prebuilt Libraries

The following table provides list of prebuilt libraries available in release package:

Library	Description
<code>ti.drv.nwal.ae66</code>	Little Endian ELF Library without SA LLD Support
<code>ti.drv.nwal.ae66e</code>	Big Endian ELF Library without SA LLD Support
<code>ti.drv.nwal.sa.ae66</code>	Little Endian ELF Library. Requires SA LLD to be linked by Application.
<code>ti.drv.nwal.sa.ae66e</code>	Big Endian ELF Library. Requires SA LLD to be linked by Application.

Steps to load NWAL library from a RTSC based application

- Applications not requiring SA LLD support
 - Add following line in XDC configuration file
`var nwalSettings = xdc.useModule('ti.drv.nwal.Settings');`
- Applications requiring SA LLD support
 - Add following line in XDC configuration file
`var nwalSettings = xdc.useModule('ti.drv.nwal.Settings');`

```
nwalSettings.useNwalSaLib = true;
```

Build guidelines for NWAL package

Below are the steps in case if source would need to be rebuilt.

Building NWAL using `gmake` in Windows environment

a) Setting Environment Variables:

➤ **C6X_GEN_INSTALL_PATH**

- Install location for Code Gen Tool
- Example for default location of Code Gen Tool 7.2 GA. Note use of forward slash for the path in the case of windows environment.

```
set C6X_GEN_INSTALL_PATH="C:/Program Files/Texas Instruments/C6000 Code  
Generation Tools 7.2.4"
```

➤ **XDC_INSTALL_PATH** [Optional - See below]

- Install location for XDC Tool
- This is only required if `gmake` available through XDC tool is being used to build the library
- Example for Default location in the case of `xdctools_3_22_04_46` [Illustration Purpose] :

```
set XDC_INSTALL_PATH=C:/Program Files/Texas Instruments/xdctools_3_22_04_46
```

➤ **PDK_INSTALL_PATH** [Optional - See below]

- Install location for PDK package
- This is only required if command prompt directory is not at PDK installation directory, for example, at `c:/Program Files/Texas Instruments/pdk_C6678_1_0_0_21/packages`

```
set PDK_INSTALL_PATH="C:/Program Files/Texas  
Instruments/pdk_C6678_1_0_0_21/packages"
```

➤ **PKTLIB_INSTALL_PATH**

- Install location for PDK package
- This is only required if PKTLIB is installed outside PDK installation directory, for example, at `c:/Program Files/Texas Instruments/pktdlib_install_dir/packages`

```
set PKTLIB_INSTALL_PATH="C:/Program Files/Texas Instruments/  
pktdlib_install_dir/packages "
```

- **SA_LLD_INSTALL_PATH**[Optional - See below]
 - Install location for PDK package
 - This is only required if either `ti.drv.nwal.sa.ae66` or `ti.drv.nwal.sa.ae66e` library needs to be rebuilt

```
set SA_LLD_INSTALL_PATH="C:/Program Files/Texas
Instruments/salld_1_0_3_0/packages"
```

- Additional environment variables are optional. Refer `setupenv.bat` for the details.
- b) Once the environment variables are initialized correctly, run `setupenv.bat` located in the `<NWAL_INSTALL_PATH>\packages>` directory to set the environment. Refer to the batch file in case if any modifications are required for the target environment.

```
setupenv.bat
```

- c) To build the NWAL LLD libraries, run following make commands:

- Build a specific library
`gmake <library name>` Example: `gmake ti.drv.nwal.sa.ae66`
- Build all libraries
`gmake all`

Note: Above command would also build NWAL libraries with SA LLD support. It would require SA LLD being installed as a pre-requisite2)

Steps to run example and/or unit test projects

The “`test`” directory in SA LLD contains unit test and several test samples which demonstrate usage of API’s.

1. Check Prerequisites

Please ensure that all dependent/pre-requisite packages are installed before proceeding with the examples and/or unit test.

2. Configure CCS Environment

The CCS environment configuration step needs to be done only once for a workspace as these settings are saved in the workspace preferences. These settings only need to be modified if:

- New workspace is selected
- Newer version of the component is being used. In that case modify the paths of the upgraded component to the newer directory.

The procedure mentioned in this section is provided using `<Managed Build Macro>` option in CCS. Following are the steps:

- a. Create a macro file if not available from the SA LLD or PDK release. For the NWAL LLD package, sample file:
<NWAL_INSTALL_PATH>\packages\macros.ini may be modified and used.
- b. Following environment would need to be available in the macros.ini file

PDK_INSTALL_PATH	=	<PDK_INSTALL_PATH>\packages
SA_INSTALL_PATH	=	<SA_INSTALL_PATH>\packages
NWAL_INSTALL_PATH	=	<NWAL_INSTALL_PATH>\packages
IPC_INSTALL_PATH	=	<IPC_INSTALL_PATH>\packages
PKTLIB_INSTALL_PATH	=	<PKTLIB_INSTALL_PATH>\packages

- c. Open CCS and select an appropriate workspace
- d. Load Managed Build Macros by
 - i. Click on File → Import
 - ii. Click on Managed Build Macros
 - iii. Select the file macros.ini
 - iv. Click on “Overwrite existing values”
 - v. Click Finish

3. Create CCS Project

NWAL package includes a batch file *nwalProjectCreate.bat* under <NWAL_INSTALL_PATH>\packages. The batch file allows creation of projects based on the different dependent tool version for all unit tests included in NWAL LLD. The batch file also allows additional executable types eg: ELF and Endianess. Batch file is supported for CCSv5.x environment.

Alternatively, projects can be created using the CCS wizard and importing required files from test and example directories.

Additional details on using *nwalProjectCreate.bat* :

- Prerequisite: All dependent components need to be installed. After the components are installed, start CCS once and wait for eclipse plugin to get into effect before running the batch file.
- Modify environment variables in *nwalProjectCreate.bat* under "<NWAL_INSTALL_PATH>\packages" directory to reflect project options. This would also include
 - ENDIAN: To select "little" or "big" endian
 - Refer additional environment settings in the batch file

Run the batch file: *nwalProjectCreate.bat*

The command line above will create projects for all NWAL unit tests.

The CCS projects will be located under the directory selected for environment variable <MY_WORKSPACE> which by default points to C:\MyPDKWorkspace<PART_NUMBER>

4. Import Project

Below are the steps for importing project assumes that CCS project is already available.

- a. Select C/C++ Development perspective
- b. Click on File → Import
- c. On the Import Dialog Box select CCS → Existing CCS/CCE Eclipse Project
- d. Click on Next
- e. This will pop up a new dialog box; ensure that 'Select Root Directory' option is selected
- f. Click on Browse and select the top level directory where the project is present. For example

C:\MyNVALWorkspace<PART_NUMBER>

<PART_NUMBER> reflects the device part number for the PDK being installed.

- g. Under the projects section you should see the project. For example

```
nwalUintTest1SaTestProject    [Unit test requiring SA LLD]
nwalUintTest2TestProject
```

- h. Click Finish

5. Build Project

To build the project; ensure that the project you want to build, i.e., *nwalUintTest2TestProject* “is set as the active project. Click on Project → Build Active Project.

6. Run Project

- a. Launch the Debugger and switch to the Debug Perspective.
- b. To execute the project ensure the following is done:
 - i. Click on Target → Reset CPU
 - ii. Click on Target → Load Program

- iii. Select the executable file to be loaded under the project workspace. Example:
 “*C:\MyNWALWorkspace\nwalUnitTest1SaTestProject\Debug\nwalUnitTest1SaTestProject.out*”
- iv. Click on OK.
- v. Once the project is loaded; click on Target → Run to execute it.